International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Loshini S et al. Int J Reprod Contracept Obstet Gynecol. 2026 May;15(5):1589-1595
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20261072

Original Research Article

Knowledge, attitude and practice toward birth preparedness and complication readiness among antenatal women: a cross-sectional study at a tertiary hospital

Loshini S.*, Ganga S., Vijayalakshmi Gnanasekaran, G. Ganitha

Department of Obstetrics & Gynaecology, ACS Medical College and Hospital, Chennai, Tamil Nadu, India

Received: 16 March 2026
Revised: 02 April 2026
Accepted: 03 April 2026

***Correspondence:**
Dr. Loshini S.,
E-mail: loshini.subbu@gmail.com

ABSTRACT

Background: Birth preparedness and complication readiness (BP/CR) is a key strategy to reduce maternal morbidity and mortality by minimizing delays in recognizing complications and accessing timely care. Despite improvements in antenatal care utilization, gaps in awareness of obstetric danger signs persist. The objective of the study was to assess the knowledge, attitude, and practice of BP/CR among antenatal women attending a tertiary healthcare facility.
Methods: A hospital-based cross-sectional study was conducted among 467 antenatal women (≥24 weeks gestation) at a tertiary care centre in Chennai between January and June 2025. Participants were enrolled using convenience sampling. Data were collected using a structured questionnaire assessing knowledge, attitude, and practice domains. Statistical analysis was performed using Stata v16, with associations tested using chi-square and t-tests.
Results: Only 36.8% of women demonstrated adequate knowledge of danger signs, whereas 64.9% had good knowledge of BP/CR components. A positive attitude toward BP/CR was observed in 70.2%, and 59.7% reported adequate preparedness. Adequate knowledge and practice were significantly associated with higher maternal education, employment, husband's literacy, and higher socioeconomic status ($p<0.05$). Multiparity was associated with better knowledge, while later gestational age correlated with a more positive attitude.
Conclusions: Although attitudes and preparedness toward BP/CR were relatively favorable, awareness of danger signs remains inadequate. Strengthening antenatal counselling with emphasis on early recognition of complications, along with addressing socioeconomic disparities and promoting partner involvement, is essential to improve maternal health outcomes.

Keywords: Birth preparedness, Complication readiness, Antenatal care, Maternal health, Danger signs, India

INTRODUCTION

Maternal and perinatal outcomes are determined not only by the availability of skilled obstetric care but also by the ability of women and their families to recognize complications early and take timely action. Delays in decision-making and accessing appropriate care continue to contribute significantly to preventable maternal mortality. The 'Three Delays' model proposed by Thaddeus and Maine provides a foundational framework linking delays in seeking, reaching, and receiving care to adverse maternal outcomes.[1]

In response to these challenges, the World Health Organization (WHO) recommends a comprehensive antenatal care (ANC) approach that emphasizes person-centred counselling, particularly focusing on recognition of danger signs and birth preparedness and complication readiness (BP/CR) as essential components of a positive pregnancy experience.[2] BP/CR is a strategic intervention

designed to reduce delays by encouraging advance planning. It is operationalized through frameworks such as the Jhpiego BP/CR Matrix, which promotes identification of a skilled birth attendant and facility, arrangement of transport, financial planning, and identification of a potential blood donor.[3] This approach involves coordinated participation from women, families, communities, and health systems.[4] Such structured preparedness has been shown to improve timely utilization of maternal health services.[5]

India has made notable progress in maternal health service coverage over recent decades. Institutional delivery rates have increased substantially, rising from approximately 79% in NFHS-4 (2015–16) to around 89% in NFHS-5 (2019–21).[6] Improvements have also been observed in early ANC registration and completion of four or more ANC visits.[7] Despite these gains, the quality and comprehensiveness of ANC services remain variable, and a significant proportion of women still do not receive adequate counselling or complete the recommended number of visits.[8] Although the maternal mortality ratio (MMR) in India declined to 88 per 100,000 live births during 2020–22, preventable causes continue to contribute to maternal deaths, indicating the need for further strengthening of behavioural and system-level interventions.[9]

Evidence from systematic reviews demonstrates that BP/CR interventions significantly increase the likelihood of delivery with skilled birth attendants and promote timely care-seeking during obstetric emergencies.[10] However, several studies have highlighted persistent gaps in knowledge of obstetric danger signs among pregnant women, even in settings where general preparedness practices such as saving money or arranging transport are relatively common.[11] This discrepancy suggests that while logistical planning may be improving, awareness and retention of critical clinical warning signs remain inadequate.

Recognition of key danger signs—including vaginal bleeding, convulsions, severe headache with visual disturbances, severe abdominal pain, and difficulty breathing—is essential for prompt decision-making and timely healthcare utilization.[12] Failure to identify these warning signs contributes to delays in seeking care and increases the risk of adverse maternal and neonatal outcomes. Furthermore, BP/CR practices are influenced by multiple sociodemographic determinants, including maternal education, employment status, spousal literacy, socioeconomic status, and exposure to antenatal care services.[13] These factors reflect broader disparities in health literacy, autonomy, and access to healthcare resources.

Despite policy emphasis and programmatic efforts, gaps persist in both knowledge and implementation of BP/CR, particularly in low- and middle-income settings. Understanding these gaps within local contexts is essential for designing targeted interventions. In this context, the present study was undertaken to assess the knowledge, attitude, and practice of birth preparedness and complication readiness among antenatal women attending a tertiary healthcare facility.

METHODS

This was a single-centre, hospital-based, observational cross-sectional study conducted in the Department of Obstetrics and Gynaecology, ACS Medical College & Hospital, Chennai, Tamil Nadu, India, over a period of six months from January 2025 to June 2025. The study was approved by the Institutional Human Ethics Committee (IHEC) (Ref No: 1200/2024/IEC/ACSMCH dated 04/07/2024). Participants were provided with a Participant Information Sheet in their native language, and written informed consent was obtained prior to enrolment.

All pregnant women attending the antenatal clinic or admitted to the Department of Obstetrics and Gynaecology during the study period were eligible for inclusion if they were in the second or third trimester of pregnancy (>24 weeks of gestation) and willing to participate. Women who were seriously ill, in active labour, had known psychiatric illness or cognitive impairment affecting their ability to respond reliably, or declined participation were excluded.

The sample size was calculated using the single population proportion formula. Assuming a 95% confidence level (Z=1.96), an expected proportion of adequate BP/CR practice of 44.9% based on previous literature, and a margin of error of 4.6% (d=0.046), the minimum required sample size was estimated to be 467 antenatal women after accounting for a 5% non-response rate.[14] A non-probability convenience sampling technique was used to recruit participants.

Data were collected using a structured and pretested questionnaire administered through face-to-face interviews. The questionnaire comprised four sections: sociodemographic characteristics, obstetric history, and assessment of knowledge, attitude, and practice regarding BP/CR. Sociodemographic variables included age, educational status, occupation, husband's educational status and occupation, and socioeconomic status. Obstetric variables included gestational age, parity, and history of stillbirth.

The knowledge domain consisted of six items assessing awareness of antenatal care services, recognition of danger signs during pregnancy, labour, and the postpartum period, and awareness of support systems such as financial arrangements, transportation, and availability of blood donors. Scores ranged from 0 to 6, with scores of 0–2 indicating poor knowledge and 3–6 indicating good knowledge.

The attitude domain evaluated participants' perceptions regarding BP/CR, including willingness to seek care upon recognizing danger signs, importance of antenatal visits, identification of a skilled provider, transport arrangements,

financial preparedness, and identification of a blood donor. Responses were recorded on a five-point Likert scale ranging from 'undecided' (1) to 'strongly agree' (5). Total scores ranged from 0 to 14, with scores of 0–6 indicating a negative attitude and 7–14 indicating a positive attitude.

The practice domain assessed actual preparations made for childbirth, including identification of a skilled provider, saving money for delivery, arranging transportation, and identifying a blood donor. Practice scores ranged from 0 to 5, with scores of 4–5 indicating adequate preparedness and 0–3 indicating inadequate preparedness.

Statistical analysis

Data were analysed using Stata version 16.0 (StataCorp, College Station, TX). Continuous variables (e.g., age, gestational age) were summarized as mean (standard deviation) after assessment of normality using Shapiro–Wilk tests and Q–Q plots. Comparisons between groups were performed using Student's t-test or Welch's t-test where appropriate. Categorical variables were expressed as frequencies and percentages. Associations between categorical variables and knowledge, attitude, and practice (dichotomized as adequate vs. inadequate) were assessed using Pearson's chi-square test or Fisher's exact test when expected cell counts were less than five. A p value of <0.05 was considered statistically significant.

RESULTS

Among 467 antenatal women, only 36.8% demonstrated adequate knowledge of danger signs in pregnancy, while 63.2% lacked such awareness (Table 1). In contrast, knowledge of BP/CR components was higher (64.9%), with a majority also exhibiting a positive attitude (70.2%). Adequate preparedness practices were observed in 59.7% of participants, whereas 40.3% remained inadequately prepared.

Table 1: Knowledge, attitude, and practice toward birth preparedness and complication readiness among antenatal women (n=467).

Domain	Operational definition (cut-off)	Adequate N (%)	Inadequate N (%)
Knowledge of danger signs in pregnancy	Good ≥3/6 items; Poor ≤2/6	172 (36.8)	295 (63.2)
Knowledge of BP/CR components	Good ≥3/6 items; Poor ≤2/6	303 (64.9)	164 (35.1)
Attitude toward BP/CR	Positive ≥7/14; Negative ≤6/14	328 (70.2)	139 (29.8)
Practice (BP/CR preparedness)	Prepared ≥4/5; Not prepared 0–3/5	279 (59.7)	188 (40.3)

Table 2: Association between knowledge level (adequate vs. inadequate) and participant characteristics (n=467).

Variables		Knowledge			P value
		Adequate (n=172)	Inadequate (n=295)	Total (n=467)	
		N (%)	N (%)	N (%)	
Age (years), Mean (SD)		27.2 (4.2)	26.2 (4.4)	26.5 (4.3)	0.014*
Age (years)	≤20	8 (4.7)	34 (11.5)	42 (9.0)	0.006*
	21 to 30	120 (69.8)	212 (71.9)	332 (71.1)	
	>30	44 (25.6)	49 (16.6)	93 (19.9)	
Education	Illiterate	14 (8.1)	56 (19.0)	70 (15.0)	0.002*
	Literate	158 (91.9)	239 (81.0)	397 (85.0)	
Occupation	Unemployed	130 (75.6)	262 (88.8)	392 (83.9)	<0.001*
	Employed	42 (24.4)	33 (11.2)	75 (16.1)	
Husbands' education	Illiterate	20 (11.6)	74 (25.1)	94 (20.1)	<0.001*
	Literate	152 (88.4)	221 (74.9)	373 (79.9)	
Husbands' occupation	Unemployed	9 (5.2)	27 (9.2)	36 (7.7)	0.126
	Employed	163 (94.8)	268 (90.8)	431 (92.3)	
Socioeconomic status	Lower	44 (25.6)	121 (41.0)	165 (35.3)	<0.001*
	Middle	93 (54.1)	147 (49.8)	240 (51.4)	
	Upper	35 (20.3)	27 (9.2)	62 (13.3)	
Gestational age (weeks), Mean (SD)		33.2 (4.2)	32.5 (4.4)	32.9 (4.3)	0.076
Gestational age (weeks)	24 to 32	60 (34.9)	130 (44.1)	190 (40.7)	0.061
	33 to 40	112 (65.1)	165 (55.9)	277 (59.3)	
Parity	Primi	82 (47.7)	175 (59.3)	257 (55.0)	0.015*
	Multi	90 (52.3)	120 (40.7)	210 (45.0)	
History of still birth	Present	7 (4.1)	13 (4.4)	20 (4.3)	0.862
	Absent	165 (95.9)	282 (95.6)	447 (95.7)	

*Statistically significant at p<0.05; SD=Standard deviation.

Table 3: Association between attitude (adequate vs. inadequate) and participant characteristics (n=467).

Variables		Attitude			P value
		Adequate (n=328)	Inadequate (n=139)	Total (n=467)	
		N (%)	N (%)	N (%)	
Age (years), Mean (SD)		26.7 (4.3)	26.2 (4.5)	26.5 (4.3)	0.272
Age (years)	≤20	24 (7.3)	18 (12.9)	42 (9.0)	0.150
	21 to 30	237 (72.3)	95 (68.3)	332 (71.1)	
	>30	67 (20.4)	26 (18.7)	93 (19.9)	
Education	Illiterate	38 (11.6)	32 (23.0)	70 (15.0)	0.002*
	Literate	290 (88.4)	107 (77.0)	397 (85.0)	
Occupation	Unemployed	264 (80.5)	128 (92.1)	392 (83.9)	0.002*
	Employed	64 (19.5)	11 (7.9)	75 (16.1)	
Husbands' education	Illiterate	56 (17.1)	38 (27.3)	94 (20.1)	0.011*
	Literate	272 (82.9)	101 (72.7)	373 (79.9)	
Husbands' occupation	Unemployed	20 (6.1)	16 (11.5)	36 (7.7)	0.065
	Employed	308 (93.9)	123 (88.5)	431 (92.3)	
Socioeconomic status	Lower	100 (30.5)	65 (46.8)	165 (35.3)	<0.001*
	Middle	168 (51.2)	72 (51.8)	240 (51.4)	
	Upper	60 (18.3)	2 (1.4)	62 (13.3)	
Gestational age (weeks), Mean (SD)		33.0 (4.3)	32.0 (4.4)	32.9 (4.3)	0.022*
Gestational age (weeks)	24 to 32	121 (36.9)	69 (49.6)	190 (40.7)	0.010*
	33 to 40	207 (63.1)	70 (50.4)	277 (59.3)	
Parity	Primi	172 (52.4)	85 (61.2)	257 (55.0)	0.084
	Multi	156 (47.6)	54 (38.8)	210 (45.0)	
History of still birth	Present	16 (4.9)	4 (2.9)	20 (4.3)	0.329
	Absent	312 (95.1)	135 (97.1)	447 (95.7)	

*Statistically significant at p<0.05; SD=Standard deviation.

Table 4: Association between practice (adequate vs. inadequate) and participant characteristics (n=467).

Variables		Practice			P value
		Adequate (n=279)	Inadequate (n=188)	Total (n=467)	
		N (%)	N (%)	N (%)	
Age (years), Mean (SD)		26.9 (4.3)	26.1 (4.5)	26.5 (4.3)	0.078
Age (years)	≤20	18 (6.5)	24 (12.8)	42 (9.0)	0.062
	21 to 30	200 (71.7)	132 (70.2)	332 (71.1)	
	>30	61 (21.9)	32 (17.0)	93 (19.9)	
Education	Illiterate	32 (11.5)	38 (20.2)	70 (15.0)	0.009*
	Literate	247 (88.5)	150 (79.8)	397 (85.0)	
Occupation	Unemployed	225 (80.6)	167 (88.8)	392 (83.9)	0.018*
	Employed	54 (19.4)	21 (11.2)	75 (16.1)	
Husbands' education	Illiterate	46 (16.5)	48 (25.5)	94 (20.1)	0.017*
	Literate	233 (83.5)	140 (74.5)	373 (79.9)	
Husbands' occupation	Unemployed	18 (6.5)	18 (9.6)	36 (7.7)	0.215
	Employed	261 (93.5)	170 (90.4)	431 (92.3)	
Socioeconomic status	Lower	82 (29.4)	83 (44.1)	165 (35.3)	<0.001*
	Middle	143 (51.3)	97 (51.6)	240 (51.4)	
	Upper	54 (19.4)	8 (4.3)	62 (13.3)	
Gestational age (weeks), Mean (SD)		33.0 (4.3)	32.4 (4.4)	32.9 (4.3)	0.142
Gestational age (weeks)	24 to 32	105 (37.6)	85 (45.2)	190 (40.7)	0.102
	33 to 40	174 (62.4)	103 (54.8)	277 (59.3)	
Parity	Primi	146 (52.3)	111 (59.0)	257 (55.0)	0.153
	Multi	133 (47.7)	77 (41.0)	210 (45.0)	
History of still birth	Present	8 (2.9)	12 (6.4)	20 (4.3)	0.066
	Absent	271 (97.1)	176 (93.6)	447 (95.7)	

*Statistically significant at p<0.05; SD=Standard deviation.

Women with adequate knowledge (n=172) were slightly older (27.2±4.2 vs 26.2±4.4 years; p=0.014) and less frequently aged below 20 years (4.7% vs 11.5%; p=0.006) (Table 2). Higher maternal literacy (91.9% vs 81.0%; p=0.002), employment (24.4% vs 11.2%; p<0.001), and husbands' literacy (88.4% vs 74.9%; p<0.001) were significantly associated with adequate knowledge. A clear socioeconomic gradient was observed, with higher knowledge among women from upper socioeconomic class (20.3% vs 9.2%; p<0.001). Multiparity was also associated with better knowledge (52.3% vs 40.7%; p=0.015). No significant association was found with gestational age, husband's occupation, or history of stillbirth.

A total of 328 women (70.2%) had a positive attitude toward BP/CR (Table 3). Adequate attitude was significantly associated with maternal literacy (88.4% vs 77.0%; p=0.002), employment (19.5% vs 7.9%; p=0.002), husbands' education (82.9% vs 72.7%; p=0.011), and higher socioeconomic status (p<0.001). Women with positive attitudes had slightly higher gestational age (33.0±4.3 vs 32.0±4.4 weeks; p=0.022) and were more often in later gestation (63.1% vs 50.4%; p=0.010). Age, parity, husband's occupation, and history of stillbirth were not significantly associated.

Adequate BP/CR practice was observed in 279 women (59.7%) (Table 4). This was significantly associated with maternal literacy (88.5% vs 79.8%; p=0.009), employment (19.4% vs 11.2%; p=0.018), husbands' education (83.5% vs 74.5%; p=0.017), and higher socioeconomic status (p<0.001). Although mean age and gestational age were slightly higher among adequately prepared women, these differences were not statistically significant. Parity, husband's occupation, and history of stillbirth were also not significantly associated.

Overall, maternal education, employment status, husbands' literacy, and socioeconomic status emerged as consistent determinants of knowledge, attitude, and practice toward BP/CR.

DISCUSSION

Birth preparedness and complication readiness (BP/CR) remains a cornerstone in reducing maternal and neonatal morbidity by addressing delays in recognizing complications and accessing care. The Three Delays model clearly demonstrates how deficiencies in awareness and preparedness translate into adverse outcomes.[1] Global recommendations emphasize structured antenatal counselling on danger signs and preparedness planning as essential components of quality antenatal care.[2] Standard BP/CR interventions—including identification of skilled providers, transport planning, financial readiness, and blood donor identification—have been consistently shown to improve timely care-seeking and skilled birth attendance.[3-5]

In the present study, only 36.8% of antenatal women demonstrated adequate knowledge of danger signs, whereas preparedness (59.7%) and positive attitude (70.2%) were relatively higher. This disparity highlights a critical gap between clinical awareness and behavioural preparedness. National data from India indicate that although antenatal care utilization has improved substantially, the quality of counselling remains inconsistent.[6] Analyses of NFHS-5 suggest that only 51–60% of women receive adequate quality antenatal care, reflecting gaps in counselling content and retention.[7,8] Despite a decline in maternal mortality ratio to 88 per 100,000 live births, delays related to poor recognition and care-seeking continue to contribute significantly to preventable deaths.[9] The low awareness observed in our study (36.8%) aligns with these national trends.

The preparedness level observed in this study (59.7%) is comparable to findings from similar settings. A systematic review has shown that BP/CR interventions can improve skilled birth attendance by 10–20%.[10] In rural India, preparedness levels ranging between 48–55% have been reported, slightly lower than our findings.[11] Studies from Ethiopia have consistently documented danger-sign awareness below 40%, closely matching our observed level of 36.8%.[12] These comparisons indicate that while behavioural preparedness is improving, knowledge of critical warning signs remains suboptimal across diverse settings.

Sociodemographic determinants played a significant role in influencing BP/CR outcomes in this study. Women with adequate knowledge and preparedness were more likely to be educated (91.9% vs 81.0%), employed (24.4% vs 11.2%), and from higher socioeconomic strata (20.3% vs 9.2%). Similar trends have been observed in national analyses from India, where higher education and socioeconomic status significantly increase institutional delivery and care utilization.[13] Evidence from Ethiopia indicates that women with formal education are 2–3 times more likely to be adequately prepared.[14] Findings from Rwanda further support that higher socioeconomic groups demonstrate better preparedness compared to lower-income populations.[15] These observations reinforce the strong influence of social determinants on maternal health behaviours.

The low level of danger-sign awareness in this study is consistent with evidence from sub-Saharan Africa. In Tanzania, only 30–40% of women were able to identify at least three key danger signs, closely mirroring our findings.[16] Additionally, less than half of women in Tanzania received adequate counselling on danger signs during antenatal visits.[17] Studies from Uganda have reported knowledge levels ranging from 34–45%, with a strong association between awareness and preparedness practices.[18] These findings highlight that inadequate counselling remains a persistent global challenge.

Preparedness levels in this study (59.7%) fall within the range reported in Ethiopia (20–60%) depending on setting and access to care.[19] Indian studies also show comparable

variability. An urban tertiary care study reported preparedness levels of approximately 57%, closely aligning with our findings.[20] Similarly, rural West Bengal studies have documented preparedness between 52–58%.[21] A recent systematic review from India indicates that BP/CR preparedness varies widely between 30% and 65% across regions.[22]

Importantly, BP/CR has a direct impact on maternal healthcare utilization. Evidence suggests that adequately prepared women are nearly twice as likely to utilize skilled birth services compared to those who are not prepared.[23] This underscores the public health significance of the 59.7% preparedness observed in our study. Multiparity was associated with better knowledge in our findings (52.3% vs 40.7%), consistent with reports indicating that prior pregnancy experience enhances awareness and preparedness.[24,25]

Male involvement also emerged as an important determinant. In this study, husband's literacy was significantly associated with better knowledge (88.4% vs 74.9%) and practice (83.5% vs 74.5%). Similar findings from Tanzania indicate that male involvement can increase preparedness by 1.5–2 times.[26] Structural barriers such as lack of transport and financial constraints remain critical contributors to delays, with studies reporting their role in 30–40% of delayed care-seeking cases.[27]

Regional comparisons further contextualize these findings. Preparedness in urban slums of Indore has been reported at 47.8%, lower than our observed 59.7%.[28] Similarly, rural Haryana studies report preparedness below 50%, reflecting persistent regional disparities.[29] These differences may be attributed to variations in healthcare infrastructure, literacy, and service accessibility, with southern regions generally demonstrating better maternal health indicators.[6]

A key finding in this study is the marked gap between knowledge (36.8%) and preparedness (59.7%). While many women had undertaken logistical preparations, fewer were able to recognize critical danger signs. This suggests that antenatal counselling may be disproportionately focused on planning components rather than clinical education. Evidence indicates that without adequate knowledge of danger signs, preparedness alone may not ensure timely care-seeking during emergencies.[10] Strengthening counselling on danger-sign recognition is therefore essential.

From a programmatic perspective, improving the quality and content of antenatal counselling is imperative. BP/CR interventions should integrate both knowledge and practice components, with targeted strategies for younger, less educated, and socioeconomically disadvantaged women. Enhancing male involvement and addressing structural barriers such as transport and financial access can further reduce delays in care-seeking.

This study has certain limitations. The cross-sectional design limits causal inference. Convenience sampling from a tertiary care setting may affect generalizability. Self-reported responses may introduce recall and social desirability bias. Additionally, factors such as quality of antenatal counselling and accessibility of services were not directly assessed.

CONCLUSION

In this study of 467 antenatal women, birth preparedness and complication readiness were satisfactory in terms of attitude (70.2%) and practice (59.7%); however, knowledge of obstetric danger signs remained inadequate (36.8%). Maternal education, employment, spousal literacy, and higher socioeconomic status emerged as consistent determinants of better knowledge, attitudes, and practices. Multiparity was associated with improved knowledge, while advancing gestational age correlated with more favourable attitudes.

The observed gap between awareness and preparedness indicates that current antenatal care may emphasize logistical planning over clinical risk recognition. Strengthening early and repeated antenatal counselling with a focused emphasis on danger-sign identification is essential. Targeted interventions addressing vulnerable groups, along with promotion of partner involvement and reduction of socioeconomic barriers, are crucial to improving timely care-seeking behaviour.

Overall, integrating comprehensive BP/CR counselling within a person-centred antenatal care framework can enhance both awareness and preparedness, thereby contributing to improved maternal health outcomes.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Thaddeus S, Maine D. Too far to walk: maternal mortality in context. Soc Sci Med. 1994;38(8):1091–00.
2. Tunçalp Ö, Pena-Rosas JP, Lawrie T, Bucagu M, Oladapo OT, Portela A, et al. WHO recommendations on antenatal care for a positive pregnancy experience—going beyond survival. BJOG. 2017;124(6):860–2.
3. Kiataphiwasu N, Kaewkiattikun K. Birth preparedness and complication readiness among pregnant women attending antenatal care at the Faculty of Medicine Vajira Hospital, Thailand. Int J Womens Health. 2018;10:797–804.
4. Soubeiga D, Gauvin L, Hatem MA, Johri M. Birth preparedness and complication readiness interventions to reduce maternal and neonatal mortality in developing countries: a systematic review and meta-analysis. BMC Pregnancy Childbirth. 2014;14:129.
5. Balcha WF, Awoke AM, Tagele A, Geremew E, Giza T, Aragaw B, et al. Practice of birth preparedness and

complication readiness and its associated factors: a health facility-based cross-sectional study. Inquiry. 2024;61:469580241236016.
6. Tripathi S, Pathak VK, Lahariya C. Key findings from NFHS-5 India report: observing trends of health indicators between NFHS-4 and NFHS-5. J Family Med Prim Care. 2023;12(9):1759–63.
7. Girotra S, Malik M, Roy S, Basu S. Utilization and determinants of adequate quality antenatal care services in India: evidence from NFHS-5 (2019–21). BMC Pregnancy Childbirth. 2023;23(1):800.
8. Nihal S, Shekhar C. Assessment of adequate quality antenatal care and its determinants in India. BMC Pregnancy Childbirth. 2024;24(1):698.
9. Bakshi RK, Kumar N, Srivastava A, Kumari S, Aggarwal P, Khan MA, et al. Decadal trends of maternal mortality and utilization of maternal health care services in India: evidence from nationally representative data. J Family Med Prim Care. 2025;14(5):1807–17.
10. Solnes Miltenburg A, Roggeveen Y, Shields L, van Elteren M, van Roosmalen J, Stekelenburg J, et al. Impact of birth preparedness and complication readiness interventions on birth with a skilled attendant: a systematic review. PLoS One. 2015;10(11):e0143382.
11. Pandey P, Srivastava RK, Kumari K, Pandey M. Status of birth preparedness and complication readiness among pregnant and recently delivered women in rural Varanasi. Indian J Community Med. 2022;47(2):249–52.
12. Yosef T, Tesfaye M. Pregnancy danger signs: knowledge and health-seeking behavior among reproductive-age women in southwest Ethiopia. Womens Health (Lond). 2021;17:17455065211063295.
13. Kar R, Wasnik AP. Determinants of public institutional births in India: an analysis using NFHS-5 factsheet data. J Family Med Prim Care. 2024;13(4):1408–20.
14. Girma D, Waleligne A, Dejene H. Birth preparedness and complication readiness practice and associated factors among pregnant women in Central Ethiopia: a cross-sectional study. PLoS One. 2022;17(10):e0276496.
15. Smeele P, Kalisa R, van Elteren M, van Roosmalen J, van den Akker T. Birth preparedness and complication readiness among pregnant women admitted in a rural hospital in Rwanda. BMC Pregnancy Childbirth. 2018;18(1):190.
16. Pembe AB, Urassa DP, Carlstedt A, Lindmark G, Nyström L, Darj E. Rural Tanzanian women's awareness of danger signs of obstetric complications. BMC Pregnancy Childbirth. 2009;9:12.
17. Pembe AB, Carlstedt A, Urassa DP, Lindmark G, Nyström L, Darj E. Quality of antenatal care in rural Tanzania: counselling on pregnancy danger signs. BMC Pregnancy Childbirth. 2010;10:35.
18. Kabakyenga JK, Östergren PO, Turyakira E, Pettersson KO. Knowledge of obstetric danger signs and birth preparedness practices among women in rural Uganda. Reprod Health. 2011;8:33.
19. Berhe AK, Muche AA, Fekadu GA, Kassa GM. Birth preparedness and complication readiness among pregnant women in Ethiopia: a systematic review and meta-analysis. Reprod Health. 2018;15(1):182.
20. Kamineni V, Murki AD, Kota VL. Birth preparedness and complication readiness among pregnant women attending an urban tertiary care hospital. J Family Med Prim Care. 2017;6(2):297–300.
21. Shree N, Dutt DK, Dasgupta A, Paul B, Bandyopadhyay L, Ghosh P, et al. Birth preparedness and complication readiness among women attending antenatal clinics in a rural area of Hooghly district, West Bengal. Med J DY Patil Vidyapeeth. 2023;16(6):872–8.
22. Singh T, Tripathy B, Pandey AK, Gautam D, Mishra SS. Birth preparedness and complication readiness in India: a systematic review and meta-analysis. BMC Womens Health. 2024;24(1):119.
23. Tura G, Afework MF, Yalew AW. Effect of birth preparedness and complication readiness on skilled care use: a prospective study. Reprod Health. 2014;11:60.
24. Limenih MA, Belay HG, Tassew HA. Birth preparedness and complication readiness among mothers in Farta district, Ethiopia: a cross-sectional study. BMC Pregnancy Childbirth. 2019;19(1):171.
25. Markos D, Bogale D. Birth preparedness and complication readiness among women of childbearing age in Goba woreda, Ethiopia. BMC Pregnancy Childbirth. 2014;14:282.
26. August F, Pembe AB, Mpembeni R, Axemo P, Darj E. Men's knowledge of obstetric danger signs and birth preparedness in rural Tanzania. PLoS One. 2015;10(5):e0125978.
27. Belda SS, Gebremariam MB. Birth preparedness and complication readiness among mothers in Goba district, Ethiopia. BMC Pregnancy Childbirth. 2016;16:73.
28. Agarwal S, Sethi V, Srivastava K, Jha PK, Baqui AH. Birth preparedness and complication readiness among slum women in Indore, India. J Health Popul Nutr. 2010;28(4):383–91.
29. Sharma N, Kumar N, Singh S, Malik JS, Jangra A. Birth preparedness and complication readiness in a rural block of Haryana. J Family Med Prim Care. 2019;8(2):482–6.

Cite this article as: Loshini S, Ganga S, Gnanasekaran V, Ganitha G. Knowledge, attitude and practice toward birth preparedness and complication readiness among antenatal women: a cross-sectional study at a tertiary hospital. Int J Reprod Contracept Obstet Gynecol 2026;15:1589-95.